

# ENTERED



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## RAW SEQUENCE LISTING

DATE: 08/18/2003

PATENT APPLICATION: US/09/994,425

TIME: 13:42:45

Input Set : N:\CrF3\RULE60\09994425.raw.txt

Output Set : N:\CRF4\08182003\I994425.raw

## SEQUENCE LISTING

```

1 (1) GENERAL INFORMATION:
2   (i) APPLICANT: Henry C. Chiu and Dennis J. Carlo
3   (ii) TITLE OF INVENTION: TARGETED DELIVERY OF GENES ENCODING
4                           INTERFERON
5   (iii) NUMBER OF SEQUENCES: 13
6   (iv) CORRESPONDENT ADDRESS:
7       (A) ADDRESSEE: LAHIVE & COCKFIELD, LLP
8       (B) STREET: 60 STATE STREET, SUITE 510
9       (C) CITY: BOSTON
10      (D) STATE: MASSACHUSETTS
11      (E) COUNTRY: USA
12      (F) ZIP: 02109-1375
13   (v) COMPUTER READABLE FORM:
14       (A) MEDIUM TYPE: Floppy disk
15       (B) COMPUTER: IBM PC compatible
16       (C) OPERATING SYSTEM: PC-DOS/MS-DOS
17       (D) SOFTWARE: Patent In Release #1.0, Version #1.25
18   (vi) CURRENT APPLICATION DATA:
C--> 19       (A) APPLICATION NUMBER: US/09/994,425
C--> 20       (B) FILING DATE: 26-Nov-2001
21       (C) CLASSIFICATION:
22   (vii) PRIOR APPLICATION DATA:
23       (A) APPLICATION NUMBER: US/09/379,434
24       (B) FILING DATE: 23-Aug-1999
25       (A) APPLICATION NUMBER: 08,819,238
26       (B) FILING DATE:
27   (viii) ATTORNEY/AGENT INFORMATION:
28       (A) FIRM, PERSON OR OTHER REPRESENTATIVE: 36,012
29       (C) REFERENCE/DOCKET NUMBER: TTI-143CPPC
30   (ix) TELECOMMUNICATION INFORMATION:
31       (A) TELEPHONE: (617)227-7400
32       (B) TELEFAX: (617)227-5941
33 (2) INFORMATION FOR SEQ ID NO: 1:
34   (i) SEQUENCE CHARACTERISTICS:
35       (A) LENGTH: 168 amino acids
36       (B) TYPE: amino acid
37       (C) TOPOLOGY: linear
38   (ii) MOLECULE TYPE: peptide
39   (v) FRAGMENT TYPE: internal
40   (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 1:
41       Cys Asn Leu Pro Gln Thr His Ser Leu Gly Ser Arg Arg Thr Leu Met

```

## RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/994,425

DATE: 08/13/2003

TIME: 13:42:45

Input Set : N:\Crf3\RULE60\09994425.raw.txt

Output Set: N:\CRF4\08182003\I994425.raw

```

44      1          5          10          15
45      Leu Leu Ala Gln Met Arg Arg Ile Ser Leu Phe Ser Cys Leu Lys Asp
46              20          25          30
W--> 47      Arg His Asp Phe Gly Phe Pro Gln Glu Glu Phe Xaa Gly Asn Gln Phe Gln
48              35          40          45
49      Lys Ala Glu Thr Ile Pro Val Leu His Glu Met Ile Gln Gln Ile Phe
50      50              55              60              65
51      Asn Leu Phe Ser Thr Lys Asp Ser Ser Ala Ala Trp Asp Glu Thr Leu
52              70              75              80
53      Leu Asp Lys Phe Tyr Thr Glu Leu Tyr Gln Gln Leu Asn Asp Leu Glu
54              85              90              95
55      Ala Cys Val Ile Gln Gly Val Gly Val Thr Glu Thr Pro Leu Met Lys
56              100              105              110
57      Glu Asp Ser Ile Leu Ala Val Arg Lys Tyr Phe Gln Arg Ile Thr Leu
58              115              120              125
59      Tyr Leu Lys Glu Lys Lys Tyr Ser Pro Cys Ala Trp Glu Val Val Arg
60      130              135              140              145
61      Ala Glu Ile Met Arg Ser Phe Ser Leu Ser Thr Asn Leu Gln Glu Ser
62              150              155              160
63      Leu Arg Ser Lys Glu
64              165

```

## 66 (2) INFORMATION FOR SEQ ID NO: 1:

## 67 (i) SEQUENCE CHARACTERISTICS:

68 (A) LENGTH: 166 amino acids

69 (E) TYPE: amino acid

70 (D) TOPOLOGY: linear

## 71 (ii) MOLECULE TYPE: peptide

## 72 (v) FRAGMENT TYPE: internal

## 73 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 2:

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74      Cys Asp Leu Pro Glu Thr His Ser Leu Asp Asn Arg Arg Thr Leu Met
75      1          5          10          15
76      Leu Leu Ala Gln Met Ser Arg Ile Ser Pro Ser Ser Cys Leu Met Asp
77              20          25          30
78      Arg His Arg Phe Gly Phe Pro Gln Glu Glu Phe Asp Gly Asn Gln Phe
79              35          40          45
80      Gln Lys Ala Pro Ala Ile Ser Val Leu His Glu Leu Ile Gln Gln Ile
81              50              55              60
82
83      65              70              75
84      Leu Leu Asp Lys Phe Cys Thr Glu Leu Tyr Gln Gln Leu Asn Asp Leu
85              85              90              95
86      Glu Ala Cys Val Met Gln Glu Glu Arg Val Gly Glu Thr Pro Leu Met
87              100              105              110
88      Asn Ala Asp Ser Ile Leu Ala Val Lys Lys Tyr Phe Arg Arg Ile Thr
89              115              120              125
90      Leu Tyr Leu Thr Glu Lys Lys Tyr Ser Pro Cys Ala Trp Glu Val Val
91              130              135              140
92      Arg Ala Glu Ile Met Arg Ser Leu Ser Leu Ser Thr Asn Leu Gln Glu
93      145              150              155              160

```

## RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/994,425

DATE: 08/18/2003

TIME: 13:42:45

Input Set : N:\Crf3\RULE60\09994425.raw.txt

Output Set: N:\CRF4\08182003\I994425.raw

```

94      Ala Leu Arg Arg Lys Glu
95      1 6
96 (2) INFORMATION FOR SEQ ID NO: 3:
97 (i) SEQUENCE CHARACTERISTICS:
98 (A) LENGTH: 6 amino acids
99 (B) TYPE: amino acid
100 (C) TOPOLOGY: linear
101 (ii) MOLECULE TYPE: peptide
102 (v) FRAGMENT TYPE: internal
103 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 3:
104      Arg Glu Lys Phe Ser Ser
105      1 6
106 (2) INFORMATION FOR SEQ ID NO: 4:
107 (i) SEQUENCE CHARACTERISTICS:
108 (A) LENGTH: 6 amino acids
109 (B) TYPE: amino acid
110 (C) TOPOLOGY: linear
111 (ii) MOLECULE TYPE: peptide
112 (v) FRAGMENT TYPE: internal
113 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 4:
114      Arg Glu Lys Phe Ser Ser
115      1 6
116 (2) INFORMATION FOR SEQ ID NO: 5:
117 (i) SEQUENCE CHARACTERISTICS:
118 (A) LENGTH: 6 amino acids
119 (B) TYPE: amino acid
120 (C) TOPOLOGY: linear
121 (ii) MOLECULE TYPE: peptide
122 (v) FRAGMENT TYPE: internal
123 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 5:
124      Arg Arg Lys Phe Ser Ser
125      1 6
126 (2) INFORMATION FOR SEQ ID NO: 6:
127 (i) SEQUENCE CHARACTERISTICS:
128 (A) LENGTH: 6 amino acids
129 (B) TYPE: amino acid
130 (C) TOPOLOGY: linear
131 (ii) MOLECULE TYPE: peptide
132 (v) FRAGMENT TYPE: internal
133 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 6:
134      Lys Glu Lys Phe Ser Ser
135      1 6
136 (2) INFORMATION FOR SEQ ID NO: 7:
137 (i) SEQUENCE CHARACTERISTICS:
138 (A) LENGTH: 6 amino acids
139 (B) TYPE: amino acid
140 (C) TOPOLOGY: linear
141 (ii) MOLECULE TYPE: peptide
142 (v) FRAGMENT TYPE: internal

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## RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/994,425

DATE: 08/18/2003

TIME: 13:42:45

Input Set : N:\Crf3\RULE60\09994425.raw.txt

Output Set: N:\CRF4\08182003\I994425.raw

148 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 7:

149 Lys Arg Lys Phe Ser Ser

150 1 5

151 (2) INFORMATION FOR SEQ ID NO: 8:

152 (i) SEQUENCE CHARACTERISTICS:

153 (A) LENGTH: 6 amino acids

154 (E) TYPE: amino acid

155 (F) TOPOLOGY: linear

156 (ii) MOLECULE TYPE: peptide

157 (v) FRAGMENT TYPE: internal

158 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 8:

159 Arg Arg Thr Phe Ser Ser

160 1 5

161 (2) INFORMATION FOR SEQ ID NO: 9:

162 (i) SEQUENCE CHARACTERISTICS:

163 (A) LENGTH: 6 amino acids

164 (E) TYPE: amino acid

165 (F) TOPOLOGY: linear

166 (ii) MOLECULE TYPE: peptide

167 (v) FRAGMENT TYPE: internal

168 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 9:

169 Lys Ala Thr Phe Ser Ser

170 1 5

171 (2) INFORMATION FOR SEQ ID NO: 10:

172 (i) SEQUENCE CHARACTERISTICS:

173 (A) LENGTH: 6 amino acids

174 (E) TYPE: amino acid

175 (F) TOPOLOGY: linear

176 (ii) MOLECULE TYPE: peptide

177 (v) FRAGMENT TYPE: internal

178 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 10:

179 Arg His Lys Phe Ser Ser

180 1 5

181 (2) INFORMATION FOR SEQ ID NO: 11:

182 (i) SEQUENCE CHARACTERISTICS:

183 (A) LENGTH: 6 amino acids

184 (E) TYPE: amino acid

185 (F) TOPOLOGY: linear

186 (ii) MOLECULE TYPE: peptide

187 (v) FRAGMENT TYPE: internal

188 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 11:

189 Arg Lys Lys Phe Ser Ser

190 1 5

191 (2) INFORMATION FOR SEQ ID NO: 12:

192 (i) SEQUENCE CHARACTERISTICS:

193 (A) LENGTH: 6 amino acids

194 (E) TYPE: amino acid

195 (F) TOPOLOGY: linear

196 (ii) MOLECULE TYPE: peptide

## RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/994,425

DATE: 08/18/2003

TIME: 13:42:45

Input Set : N:\Crf3\RULE60\09994425.raw.txt

Output Set: N:\CRF4\08182003\I994425.raw

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202      (v) FRAGMENT TYPE: internal
203      (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 12:
204          Arg Lys Thr Phe Ser Ser
205              1           5
206      (2) INFORMATION FOR SEQ ID NO: 13:
207          (i) SEQUENCE CHARACTERISTICS:
208              (A) LENGTH: 166 amino acids
209              (B) TYPE: amino acid
210              (D) TOPOLOGY: linear
211          (ii) MOLECULE TYPE: peptide
212          (v) FRAGMENT TYPE: internal
213      (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 14:
214          Cys Asp Leu Pro Gln Thr His Ser Leu Gly Ser Arg Arg Thr Leu Met
215              1           5           10           15
216          Leu Leu Ala Gln Met Arg Arg Ile Ser Leu Phe Ser Cys Leu Lys Asp
217              20           25           30
218      W--> 219      Arg His Asp Phe Gly Phe Pro Gln Glu Glu Phe Xaa Gly Asn Gln Phe Gln
219              35           40           45
220          Lys Ala Glu Thr Ile Pro Val Leu His Glu Met Ile Gln Gln Ile Phe
221              50           55           60           65
222          Asn Leu Phe Ser Thr Lys Asp Ser Ser Ala Ala Trp Asp Glu Thr Leu
223              70           75           80
224          Leu Asp Lys Phe Tyr Thr Glu Leu Tyr Gln Gln Leu Asn Asp Leu Glu
225              85           90           95
226          Ala Cys Val Ile Gln Gly Val Gly Val Thr Glu Thr Pro Leu Met Lys
227              100          105          110
228          Glu Asp Ser Ile Leu Ala Val Lys Lys Tyr Phe Arg Arg Ile Thr Leu
229              115          120          125
230          Tyr Leu Lys Glu Lys Lys Tyr Ser Pro Cys Ala Trp Glu Val Val Arg
231              130          135          140          145
232          Ala Glu Ile Met Arg Ser Phe Ser Leu Ser Thr Asn Leu Gln Glu Ser
233              150          155          160
234          Leu Arg Ser Lys Glu
235              165

```

RAW SEQUENCE LISTING ERROR SUMMARY  
PATENT APPLICATION: US/09/994,425

DATE: 08/18/2003  
TIME: 13:42:46

Input Set : N:\Crf3\RULE60\09994425.raw.txt  
Output Set: N:\CRF4\08182003\I994425.raw

Please Note:

Use of n and/or Xaa have been detected in the Sequence Listing. Please review the Sequence Listing to ensure that a corresponding explanation is presented in the <220> to <223> fields of each sequence which presents at least one n or Xaa.

Seq#:1; Xaa Pos.44  
Seq#:13; Xaa Pos.44

## VERIFICATION SUMMARY

PATENT APPLICATION: US/09/994,425

DATE: 08/18/2003

TIME: 13:42:46

Input Set : N:\Crf3\RULE60\09994425.raw.txt

Output Set: N:\CRF4\08182003\I994425.raw

L:19 M:220 C: Keyword misspelled or invalid format, [(A) APPLICATION NUMBER:]  
L:20 M:220 C: Keyword misspelled or invalid format, [(B) FILING DATE:]  
L:47 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1 after pos.:32  
L:219 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:13 after pos.:32

## STATISTICS SUMMARY

PATENT APPLICATION: US/09/994,425

DATE: 08/18/2003

TIME: 13:42:46

Input Set : N:\CrF3\RULE60\09994425.raw.txt

Output Set: N:\CRF4\08182003\I994425.raw

Application Serial Number: US/09/994,425

Alpha or Numeric or Xml: Alpha

Application Class:

Application File Date: 11-26-2001

Art Unit: OIPE

Software Application: PatentIN1.0

Total Number of Sequences: 13

Total Nucleotides: 0

Total Amino Acids: 558

Number of Errors: 0

Number of Warnings: 2

Number of Corrections: 2

## MESSAGE SUMMARY

220 C: 2 (keyword misspelled or invalid format)

341 W: 2 ((46) "n" or "Xaa" used)